Evaluating the Success of the Learning Management System Utilized at the University of Belize

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Abstract

Technology has opened gates to many possibilities and distant learning is one, allowing an interactive and offering a huge amount of support in the education system. This study seeks to decide the accomplishment of the learning framework "Moodle" at the University of Belize and overall satisfaction from its consumers. We take a closer look at how the use of Moodle, Learning Management System (LMS) influences and affects lecturers employed at the University of Belize. What we already know, based on previous literature, is that LMS has a positive impact, but on students. Our research bases our findings focusing on the teachers and the positive influence and impact that LMS has on them as a teacher, and on their teaching performance. Therefore, based on our quantitative research, we can say that LMS has a positive impact on majority of teachers at UB, to the point where they prefer to use the LMS of their choice.

Keywords: Learning Management System, E-Learning, Moodle, Moodle success

Introduction

When we introduce the topic of learning, many of the people to whom the question is brought forward to cannot pass the thought of associating it with online learning. Without a doubt, it has become the number one learning method that has made the educational world continue to revolve. Moodle being the number one method for the University of Belize to provide its students with distant learning has made it easy for its consumers to resume their studies after being disturb and taken away from face-to-face in-classroom

learning. Modular Object Oriented Distant Learning Environment or Moodle for short was invented by Martin Dougiamas in 2002, is a free and open-source learning management system (LMS), and is used for blended learning, distance education, flipped classroom and other e-learning projects in schools, universities, workplaces and other sectors.

Moodle was originally developed to help educators to create online courses with a focus on interaction and collaborative construction of content and it is in continual evolution. How it works is that it connects students from any geographical location and allows them to communicate through synchronous or asynchronous classes where they can share private messages as well. Homework, quizzes, test and projects are posted in the Moodle webpages for teachers to assess the student on their current course subject. These platforms provide many tools to help enhance the learning experience if they are used to their fullness. For example if the students interact in online class sessions then there is feedback from the instructor and this then creates communication and networking just to name a couple of outcomes. Furthermore, they provide various opportunities to explore new methods for teaching and learning. Particularly the one incorporated at the University of Belize.

The current paper investigation analyzes the success of the Moodle stage at the University of Belize. Furthermore, it talks about the consequent results of the examination done by the University of Belize understudies from the various faculties. A quantitative exploration was led with understudy respondents from the University of Belize from all over the country to give their point of view of Moodle. This was done through a survey that was separated in seven segments, which are background information, Learning Preferences, Prior Model Use, Task Technology Fit, Expected Consequences of LMS Use, Perceived Impact on Learning and Consumerization Attitude. Thusly, the paper plans to add to a systematization of the exercise and the separate modules given by Moodle just as their significance in the understudies' viewpoint.

2. Literature Review

2.1 E-learning Success

In a changing world, many institutions have been forced to evolve and turn to a more technological phase. "Although a single definition for e-learning cannot be developed that would be accepted by the majority of the scientific community due to the existence of different perspective, E-learning can be considered a natural evolution of distance learning that includes extensive technology." Sangrà, A., Vlachopoulos, D., & Cabrera, N. (2012) "E-learning is becoming more common as it allows students to be committed both at work and school simultaneously without having to sacrifice one for the other and it allows both the students and the lecturers to spend more time with friends and family." Hošková-Mayerová, Š., & Rosická, Z. (2015) this shows how students have adapted to the new technological era. Our research focuses on the impact of LMS on lecturers at the University of Belize. Countless research has been carried out to compare the face-to-face traditional teaching to e learning and whether the changes have been beneficial or not. Hala Jamal and Ameera Shanaah (2011) investigated the role of LMS in learning and teaching processes from students and teachers' perspectives. They found that students were content with the usage of LMS in their learning activities since it had a role in helping them to learn from each other's, through reflecting upon others works. Somewhat similar to this research, Galina Mozhaeva, Artem Feshchenko and Ivan Kulikov (2014) conducted a research to determine whether LMS is more effective that social networks. They found that efficiency, frequency, informational content, interaction, individual approach, cooperation and emotionality is higher in social networks than in LMS but factors disturbing learning processes in Moodle (LMS) is less than in social networks. In addition, the majority of teachers made higher evaluations on social networks but students made equal evaluations on both. McGill, T., Klobas, J. and Renzi, S. (2011) conducted a research to explore the roles of task-technology fit and level of LMS use in the performance impacts of LMS for instructors. They found that Task-Technology Fit directly affected instructors' perceptions of the impacts of the LMS on their performance, indicating that the better the fit of an LMS to the skills of an instructor and the tasks that the instructor must complete, the

more positive its effect on their performance is likely to be. The same can be compared to lecturers of UB, as they may be best suited for Moodle, Google Sites, Zoom based on the class that they are teaching. It clearly shows how TTF can be linked to better performance once paired with the correct skills and necessities. In the current years, e learning has been the focus of numerous scholars. Harandi(2015) research study demonstrates that students who engage in e learning are highly motivated and tend to perform well. Similar to this research, Kim & W. Frick (2011) conducted research on how highly driven students engage effectively in online learning and achieve learning objectives. Even with all the incorporation of e learning in the last few years, studies have been carried out that show that blended form of teaching is the best method. Tavebinik and Putch (2013) conducted a research that shows when students engage in solely online classes, disadvantages such as lack of socialization arise and that the best approach is a mixture of both traditional face-to-face classes and online classes. The blended approach encourage students to learn time management skills and to improve competence and quality of learning.

2.2 **Limitation**

"Recent research has disclosed that lectures at bigger institutions find it easier to adopt to E-learning as opposed to lecturers at smaller institutions. E-learning at smaller institutions can at times be ineffective due to the lack of poor technological infrastructure and outdated E-learning systems." Güllü, F., Kuusik, R., Shogenov, K., Laanpere, M., Oysal, Y., Sözcü, Ö. F., & Parlak, Z. (2016) Many of the researches conducted compare two or more different universities. This automatically places the smaller university at an unfair disadvantage due to the lack of technology or updated technology that the university may possess. Many of them also focus on the impact of e learning on students and not necessarily of teachers. Based on this, our research was heightened since we chose to focus on one university and focus on the teachers instead of the students. Extensive research has been carried out to show the connection between implementation of LMS and the motivation that students have to perform certain tasks. However, limited research has been conducted to correlate teachers' performance to LMS implementation.

Research Methodology

In this paper, it is based on quantitative research. This research paper carries out the methodology in where we the researchers will be finding the solution of the impact of Task Technology Fit of MIS and LMS usage in schools by lecturers.

Based on the methodology of previous literature "A task–technology fit view of learning management system impact" by Tanya J. McGill & Jane E. Klobas. Our methodology is different from the previous literature because our methodology involves identifying exactly how the LMS platforms are having an impact on lecturers who are employed at the University of Belize. While the previous literature has the methodology focusing only on students using only one LMS platform.

The assumptions of this previous literature "A task–technology fit view of learning management system impact" by Tanya J. McGill & Jane E. Klobas is that the researchers had the assumption that the impact of LMS on students' performance is always positive and improved academic performance. This is an assumption, because there are some students' who are enrolled in online classes that use LMS platforms, but still end up failing a course. Even though this doesn't occur majority of the time, it is still possible for a student to fail even when using LMS. Another assumption of this previous literature is that the researchers had the assumption that students are able to handle using a LMS platform, which makes them complete their school activities quicker and easier. This is an assumption because there are students who may not know much about technology and can find it difficult to manoeuvre the LMS, which doesn't help them in completing school activities quick and easy.

The limitation of this previous literature can be the researcher's sample size, which is only students using one LMS platform which was WebCT (Tanya J. McGill & Jane E. Klobas, 2008). This limitation is where

the researchers had their sample size limited to only students from one university located in Australia, who were using only one LMS platform at the time they were surveyed.

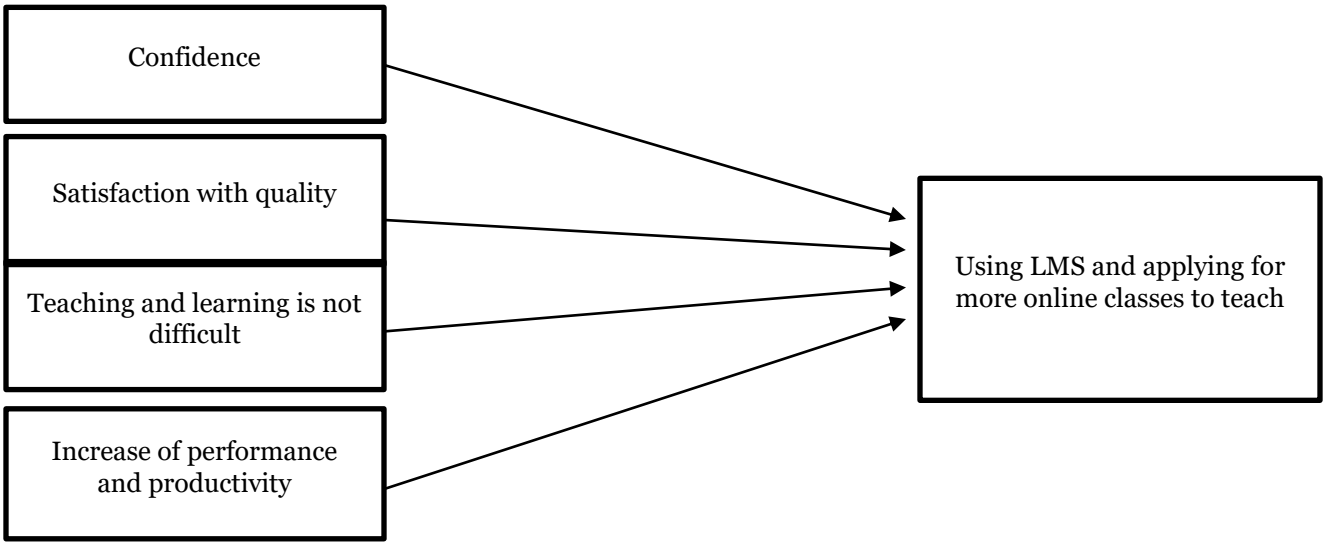

Figure 1

The model in Figure 1 shows the panel on the left of what lecturers feels towards the usage of TTF of LMS in school. Once lecturers can feel confident in using the LMS, is satisfied with the quality and finds it quite easy to teach and learn to use the LMS, then they will have that sense of productivity. So, they will be more likely to use LMS to teach/lecture in online classes, apply to teach online classes, and even using LMS for extra course resources for face to face classes.

It can also be viewed on the students' perspective. Once the students have confidence, satisfaction with using the LMS and finding that learning is not difficult which increases their productivity and performance, and then they are more likely to apply to more online classes that use LMS for E-Learning.

All different pieces of the model in Figure 1 relates together in a way which makes you the readers be able to see visually and be able to see how the connection between different pieces are able to relate back to one piece of the model. This makes the structure of the model work together, which helps us to achieve one of our objective, which is to show how the LMS platform impacts lecturers at the University of Belize in a positive way based on Figure 1.

The robustness of this structure is strong and reliable, because the pieces of the model can remain the same even if some conditions change. For example, since the University of Belize is now online, LMS are a must and are used by students and lecturers daily. However, if the conditions change, meaning if UB goes back to having classes majority by face to face, then LMS platforms can still be used by the lecturer, which satisfies all pieces of the model in Figure 1. So, for example, this means that if the conditions change to face to face, then LMS can be used by lecturers to post extra learning resources that aids in extra learning for students if they don't understand some course concepts during class, so that they can use the LMS (like Moodle) after class on their own time to review. This then satisfies the pieces of the model structure of confidence, satisfaction with quality of LMS, learning, and increased productivity and performance in lecturers.

Participants

The participants in research were the teachers who are employed and lectures/teachers at the University of Belize. The main LMS platform used at the University of Belize is Moodle, and it's what all lecturers were using to access the courses they teach, along with the links needed for the lecturers to conduct their live session classes. Even though other LMS platforms were used, Moodle is the main one.

Procedures

The procedures used to carry out this research to obtain and collect data was the use of questionnaires that were made in Google Forms. The link to the Google Form questionnaire was then distributed to teachers via email and it only takes 1-3 minutes to complete. All responses from the teachers who participated were recorded and remain anonymous.

Measurements

The core constructs of the questionnaire made on Google Forms was formed based on Moodle as the main LMS platform. The questionnaire was reviewed; no changes were made to the questions, as it was great how it was.

The questions for the questionnaire were split into seven sections, which were:

- Background Information
- Teaching preferences
- Prior Moodle use
- Task-Technology Fit
- Expected consequence of LMS use
- Perceived impact on teaching
- Consumerization Attitude (Perceived fit, Expected performance improvement)

The first section of the questionnaire just asks the background information regarding age, gender, degree, etc. The second section asked questions based on whether the teachers at UB prefers to teach online classes or teach face to face classes, and if they feel themselves and students to be more efficient in face to face learning or in online class learning.

The third section of the questionnaire asked questions based on the teachers use of the LMS platform. That is, if the teachers used LMS platforms before UB went online, and if teachers would like to continue using the LMS even after UB returns face to face. The fourth section of the questionnaire asked questions based on the LMS platform if it is easy to use by the teachers, and if Moodle is up to date to provide accurate information to students. The fifth section of the questionnaire is based on questions pertaining the teachers' effectiveness online like their teaching, productivity, and performance as a teacher.

The sixth section of the questionnaire is asks questions based on how effective the teachers feel Moodle is as an aid to teaching online and how much of an impact Moodle has on them. The last section in the questionnaire asks questions that are majorly based on the LMS platforms of choice. In this section, teachers reveal if they prefer to use Moodle, or if they prefer to use the LMS platform of their choice and preference.

Research Questions

This research paper is to show and make knowledgeable about the Task Technology Fit in LMS about how it impacts teachers when using it for the distribution of course material and as e-learning in an institution. In this research, the focus was also geared towards these six research questions. They are:

- How does the use of LMS in Task Technology Fit influence and affect the lecturers' based on their performance?
- The consequences of using LMS will be positive in terms of what to expect with the Task Technology Fit.
- The use of LMS by teachers in Task Technology Fit will end up being a positive impact on their attitudes toward it.
- Teachers will make use of the LMS platform in a positive way, based on the influence of the expected consequences of the LMS.
- Teachers will make use of the LMS platform based on their attitude that they have toward the LMS.
- The usage of LMS by teachers will be affected and influenced in a positive way, based on social norms like ease of access.

All these research questions above were adopted and obtained from the research "A task–technology fit view of learning management system impact" written by Tanya J. McGill & Jane E. Klobas.

These are the research questions, but we are not going to test it. Only use it for the model below in Figure 2.

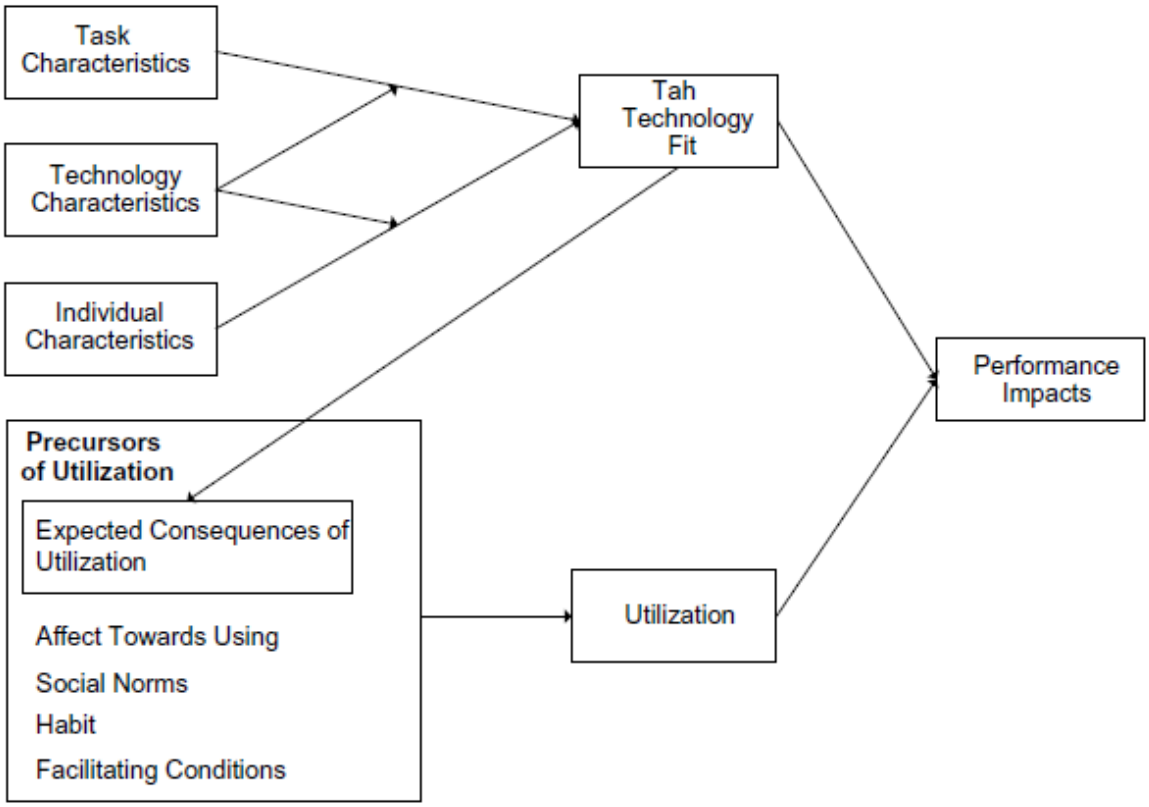

Figure 2: (McGill & Klobas, 2008)

This model above was adopted from the research journal "A task–technology fit view of learning management system impact" written by Tanya J. McGill & Jane E. Klobas.

Does consumerization attitude impact the task technology fit of a learning management system? Evidence from Belize

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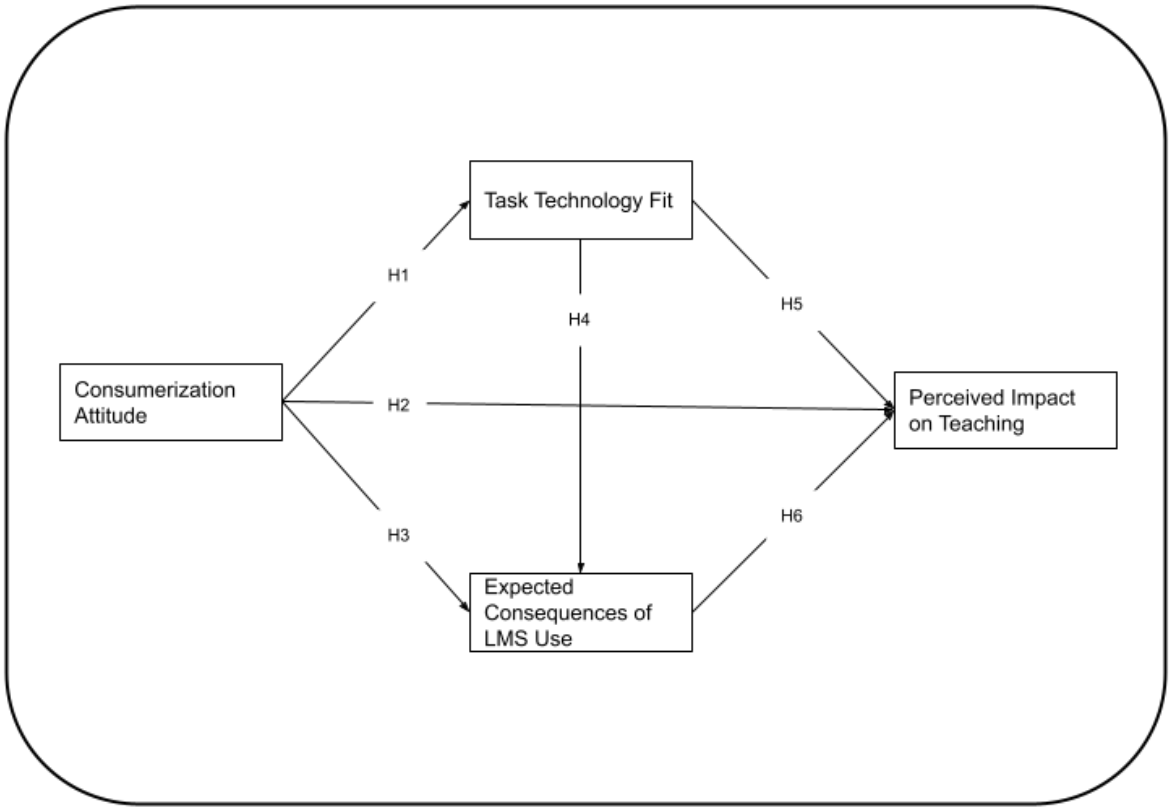
MODEL, HYPOTHESIS, AND SURVEY FOR TEACHER SURVEY



H1: Consumerization attitude will negatively influence perceived task-technology fit.

H2: Consumerization attitude will positively influence perceived impact on teaching.

H3: Consumerization attitude will negatively influence expected consequences of LMS use.

H4: Task–technology fit will have a positive influence on expected consequences of organizational LMS use.

H5: Task–technology fit will have a positive influence on perceived impact on teaching.
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H6: Expected consequences of LMS use will positively influence perceived impact on teaching.

Table 1: Questionnaire Survey

Sections	**Questions**
Background Information	1.) Please indicate your gender: Male, Female 2.) Please indicate your age range: 20 - 30, 31-40, 41-50,51-60, >60 3.) Degree: Associates, Bachelor's, Master's, PhD, MD, Other 4.) Faculty: FST, FMSS, FEA, FHS 5.) I have used the following LMS's: Moodle, Google Classroom Other: List all 6.) I took one or more online classes prior to the pandemic.
Teaching Preferences	1.) I prefer teaching face to face than online 2.) I am more effective teaching face to face than online 3.) Students learn more in my face to face classes than online 4.) I would want to teach some online courses after the University resumes face to face teaching. 5.) I would want to teach all my courses online after the University moves back to face to face teaching. 6.) I would not want to teach any online courses after the University moves back to face to face teaching.
Prior Moodle use	1.) Number of semesters using Moodle 2.) I used Moodle to facilitate teaching face to face classes (prior to online delivery) 3.) I have taught classes utilizing an LMS other than Moodle 4.) How many semesters have you taught using your choice of LMS

	5.) I used my choice of LMS to facilitate teaching face to face classes (prior to online delivery) 6.) I plan to continue using Moodle to enhance my teaching after we return to face to face teaching. 7.) I would like to continue using my preferred LMS to enhance my teaching after we return to face to face teaching.
Task-Technology Fit	1.) Moodle fits well with the way I like to teach online. 2.) Moodle is compatible with all aspects of my online teaching. 3.) Moodle is easy to use. 4.) Moodle is user friendly. 5.) It is easy to get Moodle to do what I want it to do. 6.) Moodle is easy to learn. 7.) It is easy for me to become more skillful at using Moodle. 8.) New features of Moodle are easy to learn. 9.) Do you think the output from Moodle to the students is presented in a useful format? 10.) Can you provide accurate information to your students with Moodle? 11.) Can you provide up-to-date information to your students with Moodle? 12.) Can you provide information students need in time using Moodle? 13.) Can you provide information that seems to be just about exactly what your students' need with Moodle?
Expected consequence of LMS use	1.) Using Moodle will help me to accomplish my online teaching more quickly. 2.) Using Moodle will improve my online teaching performance.

	3.) Using Moodle will increase my online teaching productivity. 4.) Using Moodle will enhance my effectiveness as a teacher while teaching online. 5.) Using Moodle will make it easier to complete my teaching tasks while teaching online. 6.) Using Moodle will give me greater control over my teaching tasks while teaching online. 7.) Overall, I think that Moodle will be useful in my ability to teach online. 8.) Using Moodle will improve the quality of my online teaching.
Perceived impact on teaching	1.) Moodle has a large positive impact on my effectiveness and productivity as an online teacher. 2.) Moodle is an important and valuable aid to me in my online teaching. 3.) I teach better online with Moodle than without it.
Consumerization Attitude (Perceived fit)	1.) If I could choose my own Learning Managements System it would fit well with teaching online. 2.) If I could choose my own Learning Managements System it would fit well with helping me to be efficient in teaching online. 3.) If I could choose my own Learning Managements System it would be compatible with my online teaching. .
Consumerization Attitude (Expected Performance Improvement)	1.) If I could choose my own Learning Managements System my online teaching performance would improve. 2.) If I could choose my own Learning Managements System my online teaching productivity would improve. 3.) If I could choose my own Learning Managements System I would work faster while teaching online.

Data Analysis

In this section, our research has changed from basic to applied research in which a hypothesis will not be tested. Instead, we will be presenting the data as applied research and the results will be given in histograms. The questions ranged from strongly disagree to strongly agree on a seven-point Likert scale. Below are 12 histograms to look at as well as a table showing all 12 histograms together.

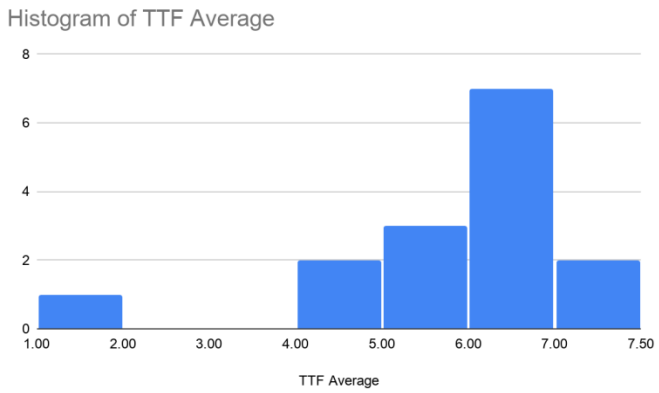


Figure 1: TTF Average of Teachers who Use Moodle Only

The chart above illustrates the perception of UB teachers who only use Moodle. The data shows that the majority of the teachers agree and strongly agree that the task fits the technology, a small amount agrees, and a few don't agree that the task fits the technology.

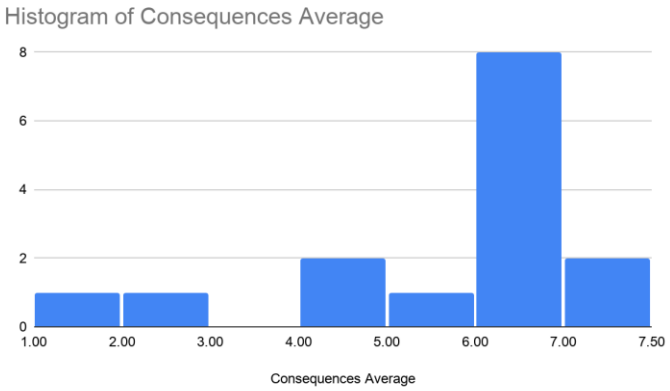


Figure 2:Consequences Average of Teachers who Use Moodle Only

The chart above shows the perception of UB teachers who only use Moodle. The data shows that the majority of the teachers agree and strongly agree that the consequences of using Moodle will help them with how they teach students and a small amount disagree and strongly disagree that the consequences of using Moodle will not help them with how they teach students.

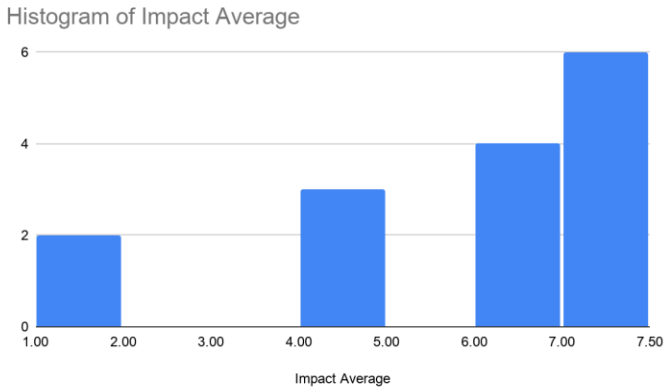


Figure 3: Impact Average of Teachers who Use Moodle Only

The chart above shows the perception of UB teachers who only use Moodle. The data shows that the majority of the teachers agree and strongly agree that Moodle has an effective impact on their teaching, some are neutral about the effective impact Moodle has on their teaching, and a few strangely disagree that Moodle has an effective impact on their teaching.

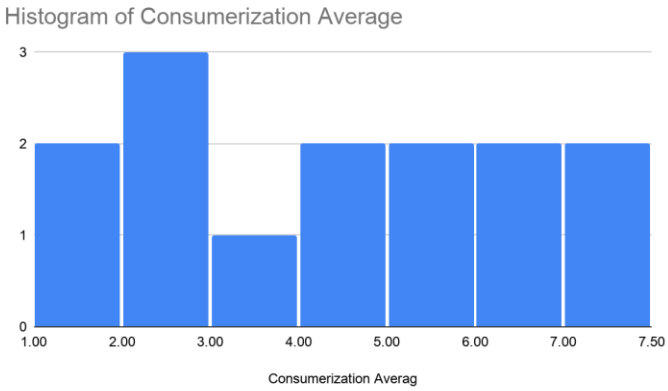


Figure 4: Consumerization Average of Teachers who Use Moodle Only

The chart above shows the perception of UB teachers who only use Moodle. The data shows that the majority of the teachers agree and strongly agree that if they were to use their own choice of learning management system that their performance as a teacher would improve, a small amount is neutral, and a good amount disagree and strongly disagree that if they were to use their own choice of learning management system that their performance as a teacher would not improve.

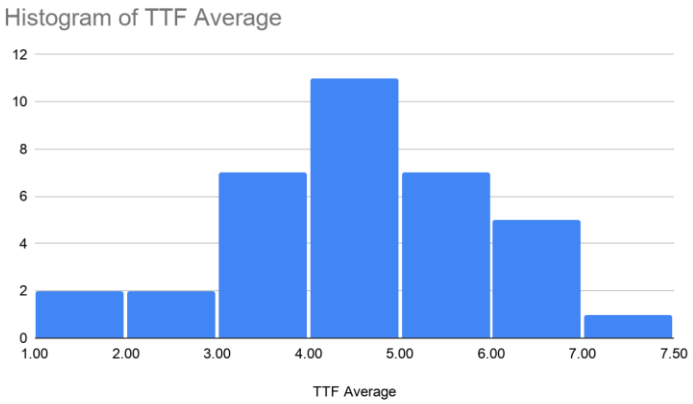


Figure 5: TTF Average of Teachers who Use Moodle and Other LMS

The chart above illustrates the perception of UB teachers who use Moodle and other learning management systems. The data shows that the majority of the teachers think that Moodle's technology fits the task with 11 of them being neutral, 7 of them moderately agreeing and disagreeing, 5 who agree, 1 who strongly agree, and 2 who disagrees and strongly disagrees.

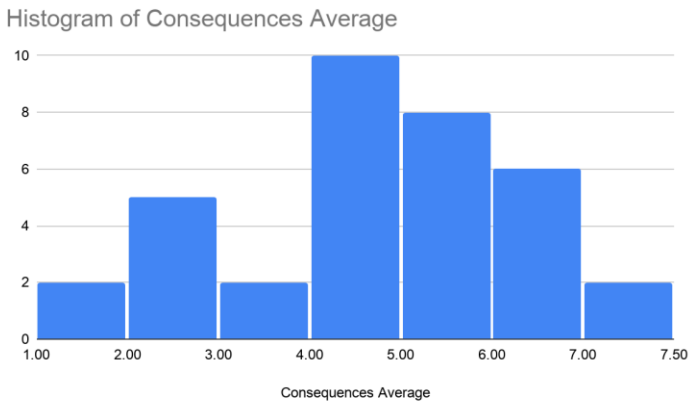


Figure 6: Consequences Average of Teachers who Use Moodle and Other LMS

The chart above shows the perception of UB teachers who use Moodle and other learning management systems. The data shows that the majority of the teachers are neutral with 10 who feel that the consequences of using Moodle help them with how they teach students, a large amount agrees that Moodle does help them with how they teach, and a small amount who feels that Moodle will not help them with how they teach.

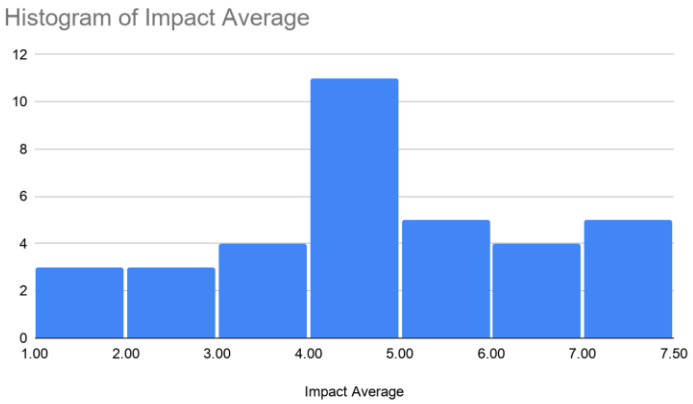


Figure 7: Impact Average of Teachers who Use Moodle and Other LMS

The chart above shows the perception of UB teachers who use Moodle and other learning management systems. The data shows that the majority of the teachers agree and strongly agree that moodle has an effective impact on their teaching, a significant amount which is 11 are neutral, and a small amount, moderately disagree, disagree, and strongly disagree that Moodle has an effective impact on their teaching

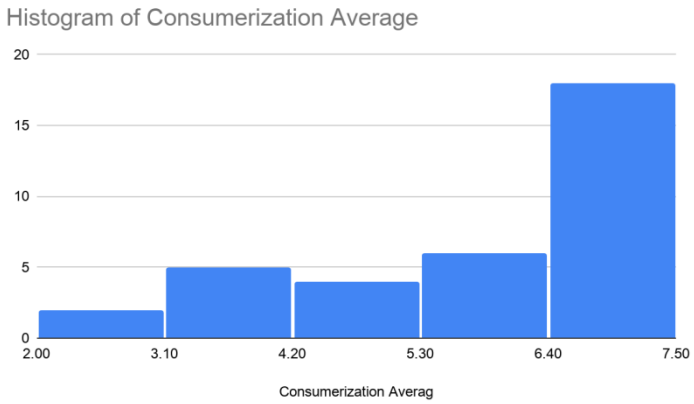


Figure 8:Consumerization Average of Teachers who Use Moodle and Other LMS

The chart above illustrates the perception of UB teachers who use Moodle and other learning management systems. The data shows that the majority of the teachers strongly agree and agree that if they were to use their own choice of learning management system that their performance as a teacher would improve, 6 were neutral, 5 disagrees, and 2 strongly disagrees.

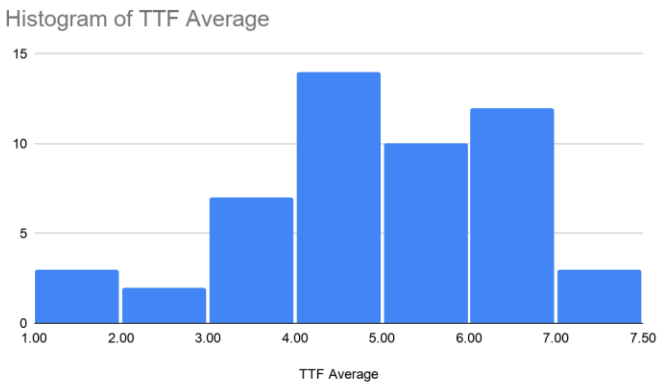


Figure 9: All Teachers TTF Average

The chart above shows the perception of UB teachers who only use Moodle and teachers who use Moodle and other learning management systems. The data shows that the majority of the teachers feel that it is neutral that Moodle task fits the technology, 12 agree, 10 moderately agree, and 3 strongly agree. For those who disagree that Moodle's task fits the technology, 7 moderately disagree, 2 disagree, and 3 strongly disagree.

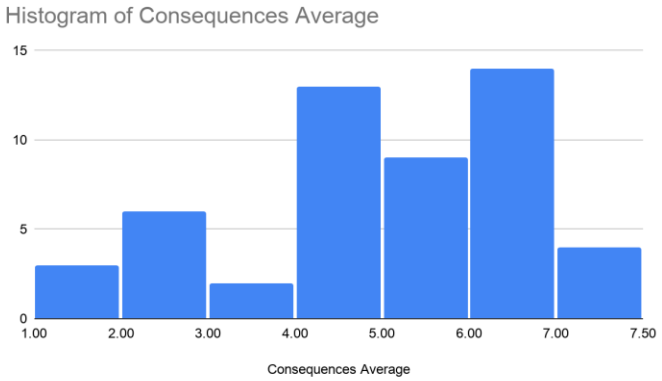


Figure 10: All Teachers Consequences Average

The chart above shows the perception of UB teachers who only use Moodle and teachers who use Moodle and other learning management systems. The data shows that the majority of the teachers agree with 14 who feel that the consequences of using Moodle help them with how they teach students, 4 who strongly agree, 9 who moderately agree, and 13 who are neutral. A small amount which is 6 disagree, 2 who moderately disagree, and 3 who strongly disagree.

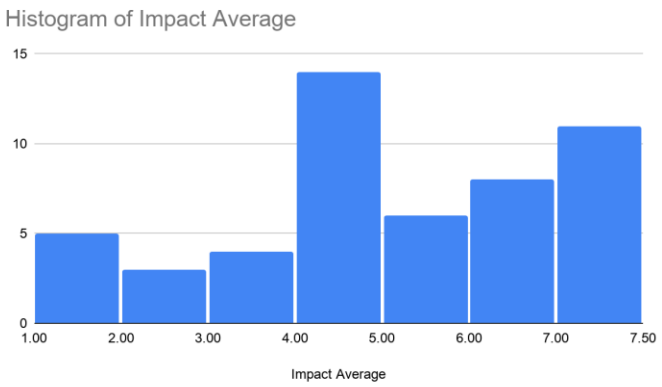


Figure 11: All Teachers Impact Average

The chart above shows the perception of UB teachers who only use Moodle and teachers who use Moodle and other learning management systems. The data shows that the majority of the teachers are neutral about Moodle's effective impact on their teaching, 8 agree, 11 strongly agree, and 6 moderately agree. For those who disagree with Moodle's effective impact on their teaching, 4 moderately disagree, 3 disagree, and 5 strongly disagree.

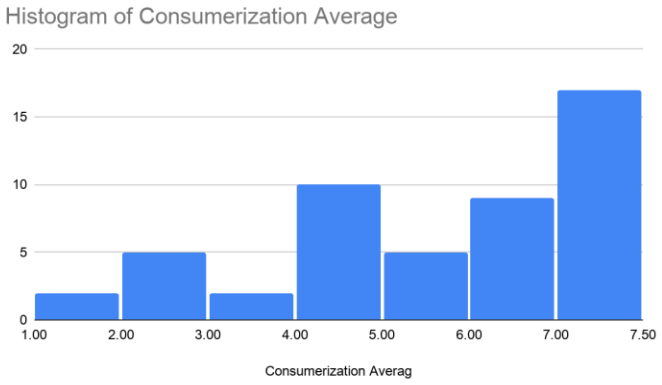


Figure 12: All Teachers Consumerization Average

The chart above shows the perception of UB teachers who only use Moodle and teachers who use Moodle and other learning management systems. The data shows that the majority of the teachers strongly agree that if they were to use their own choice of learning management system that their performance as a teacher would improve, 10 were neutral, 9 agreed, and 5 moderately agreed. For those who disagree, 2 moderately disagree and strongly disagree, and 5 disagreed.

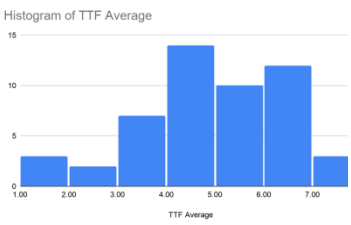
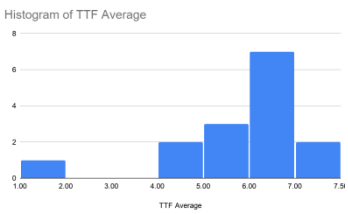
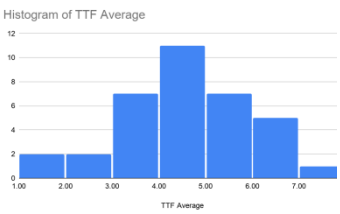
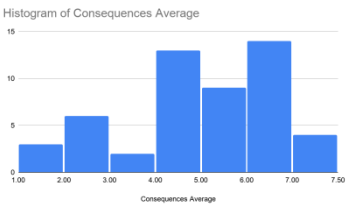
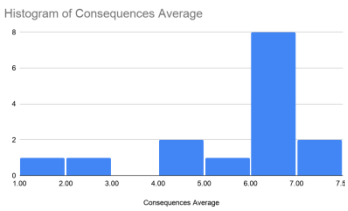
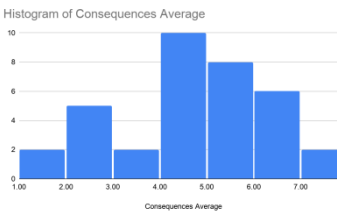
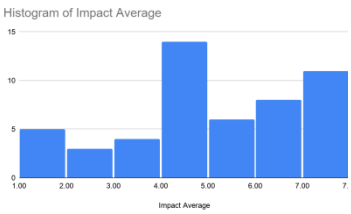
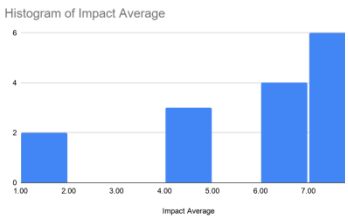
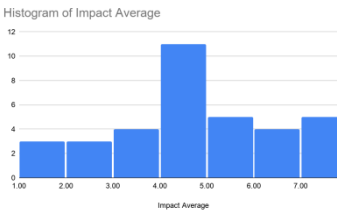
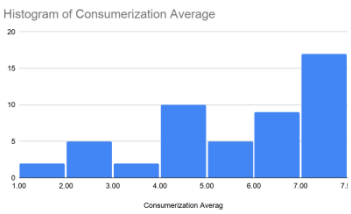
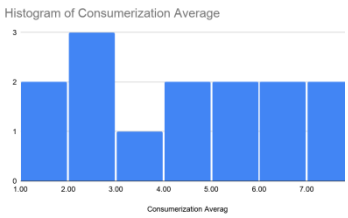
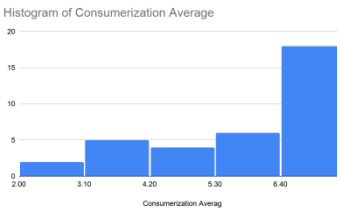
	All Responses	Moodle only (No)	Moodle + (Yes)
TTF			
Consequence			
Impact			
Consumerization			

Figure 13

The table above shows the averages of all the teachers responses who use only Moodle, Moodle and other LMS, and a combination of those who use only Moodle and those who use Moodle and other LMS. The figure shows a big difference between the teachers who use only Moodle and teachers who use Moodle and other LMS which is shown in the consumerization histograms. It can be seen that in the consumerization histogram, the majority of the teachers who use Moodle and other LMS feel that they can teach better if they could choose their own LMS. On the other hand, in the consumerization histogram for teachers who only use Moodle, it can be seen that it doesn't matter to them.

Conclusion

This study was conducted in order to investigate the success of Moodle stage at the University of Belize and its impact on the lecturers. The subsequent results of the examination was from various faculties of the University of Belize. Respondents from various faculties of the University of Belize gave their viewpoints on the Moodle platform. The quantitative investigation was conducted through a survey that was divided into seven segments. The segments were Background Information, Learning Preferences, Prior Model use, Task Technology Fit, Expected Consequences of LMS use, Perceived Impact on Learning and Consumerization Attitude.

It was revealed that lecturers of UB were contented using Moodle, Google Sites, and Zoom based on the class that they were teaching. The data collected was observe that the majority of the teachers who were using only Moodle agreed and strongly agreed that the task fits the technology and a small amount agreed. Furthermore, a few did not agree that the task fits the technology. Majority of the teachers also revealed that they agreed and strongly agreed that Moodle would help them teach the students, while only a small number of teachers disagreed. It was also realized that majority of the lecturers thought the use of their own LMS platforms would improve their teaching performance.

The measures used to carry out this research to attain and collect data was the use of questionnaires that was prepared in Google Forms. The Google Form questionnaire was then distributed to teachers via email. This questionnaire was assumed to take 1-3 minutes to complete. All responses from the teachers who contributed were recorded and remained unspecified. However, limited examination was conducted to associate teachers' performance to LMS implementation.

For future studies within this area, researchers should consider observing several comparable institutions. The number of lecturers who contributed to this research was limited which makes it subjective to implement LMS as the main education platform for the University of Belize.

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